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Title of the Thesis: Development of Assessment Scale for Primary School Teachers to Identify Children with Learning Disability

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01.04.2024

I. INTRODUCTION

Teachers possess a unique ability to impact the lives of their students profoundly. Gandhimathi (2010) emphasizes the crucial role that teachers play in any educational system, portraying them as artists who mould and shape the physical, intellectual, and moral powers of children. Quoting Mahatma Gandhi, Jose, and Solomon emphasize that education, according to the great leader, involves drawing out the best in a child across dimensions such as the body, mind, and spirit. How teachers address the essential needs directly influences students' well-being, motivation, engagement, and academic achievement (Ryan and Deci, 2017). According to Wang (2023), how teachers interact with their students not only influences the results of learning but also plays a significant role in shaping the overall atmosphere of the classroom.

Reaching every student in the class presents numerous obstacles for teachers. The issues that the students are dealing with in the classroom should be known by the teacher. One of the main issues that many children deal with is learning disabilities (LD). There are between 5–15% of youngsters in India who have a specific learning disability, according to Muthusamy K and Sahu JK (2020). India has 416 million children, 10–14% of whom have Learning Disability. Every average class in India is said to include five pupils with learning disabilities (Saravanabhavan,S 2010). In a recent study titled "Prevalence and pattern of Learning Disability in India: A Systematic Review and Meta–Analysis" conducted by Joseph JK and Devu BK in the year 2023, the findings revealed that the prevalence of learning disability among Indian children varies widely, ranging from 2.16% to 30.77% across the studies included in the review and meta-analysis.

Inclusive education for Children with Special Needs (CWSN) has been a significant focus of intervention under previous educational schemes such as Sarva Shiksha Abhiyan (SSA), Right to Education (RTE), and Rashtriya Madhyamik Shiksha Abhiyan (RMSA). NEP recommendations highlight on inclusive education through Samagra Shiksha (National Education Policy 2020 - Quality Education for Students and Teachers (QUEST), NEP Para 3.1, pg 38). Inclusive education is a philosophy that ensures all students, regardless of their abilities or disabilities, are provided with meaningful opportunities to learn and participate in the educational environment. It promotes diversity, equity, and belonging by recognizing and valuing the unique strengths and contributions of every individual.

Due to the prevailing incidence of learning disabilities in schools, it appears necessary for primary school teachers to be more familiar with the learning disability phenomenon than any

other teachers so that identification is made during early years of schooling. A teacher must be knowledgeable about the identification and remediation of children with learning disabilities to offer a learning environment for the children to succeed. According to the study conducted by Ghimire et.al (2017), it was found that only 30.5% of teachers were able to identify learning disabilities in their students. This highlights the need for increased knowledge and teacher training in identifying learning disabilities. Knowledge plays a vital role in identifying learning disabilities. Teachers' positive attitudes towards students with LD create inclusive environments, fostering academic and socio-emotional growth. Effective teaching practices, including collaboration and monitoring, are crucial for supporting LD students. Assessment tools can aid teachers in early identification and intervention, enhancing overall outcomes. However, tailored tools for primary school teachers are lacking, emphasizing the need for teacher empowerment and practical screening measures at the primary level. Hence, the development of an assessment scale for primary school teachers to identify LD in normal classroom setup becomes important for early identification. Consequently, a research study on developing an assessment tool for primary school teachers to identify children with learning disabilities was taken up with the following objectives

Primary Objective

- To develop an Assessment Scale for Primary school teachers to Identify children with Learning Disability

Secondary Objectives

- To assess the Knowledge, Attitude, and Practice (KAP) of primary school teachers on learning disability
- To study the determinants of KAP of the primary school teachers on learning disability
- To conduct a Sensitization Programme for primary school teachers on Learning Disability and to examine its effects on Knowledge Attitude Practice (KAP) on learning disability

II. REVIEW OF LITERATURE

In the present study, the available literatures were reviewed under the following heads

A. Learning Disability and Inclusive Education

B. Prevalence of learning disability

C. Importance of identification of learning disability at the primary school level

D. Role of teachers in the identification of learning disability

E. Development of tools to identify learning disability among children

F. Knowledge, attitude, and practice of teachers on learning disability

G. Need and importance of sensitizing teachers on learning disability

III. METHODOLOGY

To achieve the research objectives and observe the assumptions, a cross-sectional research design was employed, utilizing purposive sampling to select primary school teachers from schools within the Coimbatore district of Tamil Nadu, India. The study focused on educators from mainstream classrooms, encompassing both government and private schools instructing students from grades 1 to 5. A list of primary schools in the Coimbatore district was obtained from the District Education Office to facilitate the selection process. Inclusive criteria comprised both male and female teachers from government and private schools, while exclusion criteria included teachers from special schools, tuition providers, those with disabilities, and physical education instructors. The sample was drawn from five zones across Coimbatore, namely the north, south, east, west, and central zones. Initially, 600 primary school teachers were approached, of which 562 consented to participate. Ultimately, data from 514 teachers were considered for analysis, based on the clarity and completeness of the collected data. The Institute Human Ethics clearance was obtained (AUW/IHEC/HD-19-20/XPD/48).

The development of study tools progressed through two distinct phases. In Phase I, a comprehensive review of existing literature was conducted, alongside theoretical orientation sessions. Phase II involved the actual construction of the tools, which included several key steps. Firstly, an Assessment Scale tailored for primary school teachers to identify learning disabilities was formulated. This was followed by the face validity and content validity for the newly developed scale. Additionally, a Knowledge, Attitude, and Practices (KAP) scale focusing on teachers' understanding and approach towards learning disabilities was constructed. The KAP scale also was subjected to face validity and content validity. A pilot study was conducted to validate the effectiveness and reliability of the developed tools. Through these systematic phases, the study tools were meticulously crafted and validated, ensuring their efficacy and relevance for the research objectives.

Sensitization Programme was tailored to the needs identified in the initial phase. The researcher meticulously crafted program materials to address these specific needs, ensuring they were informative and engaging. Once finalized, the sensitization program was executed, aiming to raise awareness, understanding, and responsiveness among primary school teachers regarding learning disabilities. This program was instrumental in familiarizing teachers with crucial aspects such as identification techniques, assessment scales, and inclusive teaching strategies.

The Sensitization Programme was grounded in Gagne's Conditions of Learning Theory, providing a robust theoretical framework for its design. Following this model, content was structured into 12 one-hour sessions conducted over six weeks, with two sessions per week. A total of 53 teachers willingly participated in the program, with data collected at three intervals: before the sensitization programme, 7 days after, and 30 days follow-up data.

Data analysis: The standardization procedures encompassed various validity and reliability tests, including content validity, principal component analysis, exploratory factor analysis, confirmatory factor analysis (structural equation modeling), and reliability tests such as Cronbach's alpha, test-retest, inter-rater reliability, and sensitivity and specificity tests. Data collected on teachers' Knowledge, Attitude, and Practices (KAP), along with socio-demographic markers, underwent descriptive analysis to compute frequencies and percentages. Statistical analysis was conducted to fulfill research objectives, involving calculations of frequencies and percentages, as well as application of statistical tests such as the Mann-Whitney U test, Kruskal-Wallis test, and post-hoc tests to assess associations and influences between variables. The Friedman Test was utilized to examine data before, after, and during follow-up of the sensitization program, evaluating sample responses over time. Pairwise comparisons before and after the sensitization program and during follow-up were analyzed using the Wilcoxon Signed Ranks Test to assess the program's impact.

IV. RESULTS OF THE STUDY

A. Tool standardization

The tool standardization process included validity and reliability tests. The validity and reliability of the tool were found to be in good fit. The obtained results are as follows:

a. Validity Test

Face and Content Validity

At first, the developed assessment tool consisted of 104 items which was subjected to face validity and content validity, after this it was reduced to 96 items by rewording, removing repetitions and deletions etc by the subject experts. The tool consisted of 7 domains of LD.

Principle Component Analysis and Exploratory factor analysis

In factor analysis, the obtained results are as follows

- **KMO Kaiser-Meyer-Olkin** Measure of Sampling Adequacy = .959 indicated adequate sampling.
- **Bartlett's Test of Sphericity** sig at 1% level
- **Factor loading and Communalities** – 96 items were grouped into 7 components, in which, out of 96 items 48 items had the factor loadings of more than .4 and these 48 items categorized under 7 components constituted to be the assessment tool to identify LD.
- **Rotated Component Matrix** displayed the loadings for each item on each rotated component, again clearly showing which items make up each component – according to which components were interpreted and named as follows

- Component 1 - Perceptual ability
- Component 2 - Executing reading and writing
- Component 3 - Thought process in reading and writing
- Component 4 – Cognitive functioning
- Component 5 - Mathematical ability
- Component 6 – Classroom behaviour
- Component 7- Motor skills

- **Total variance** was explained with Eigenvalues over 1 for all the 7 components, Cumulative % of 65.58 indicated an acceptable range of the tool in the standardization process. The factor correlation of the Component Transformation Matrix displayed the correlations of value less than 0.8. indicated the correlation between the components was not highly significant indicating a good validation value.

Confirmatory factor analysis - (SEM)

Confirmatory factor analysis was done using Structural Equation Modeling (SEM) indicated a good model fit scale with the factor loading above .7 for most of the items and the values of CFI= 0.90, GFI=.806, PCFI= 0.813, RMSEA= .062, all being in the acceptable range.

b. Reliability Test

Cronbach's Alpha test showed the overall reliability of the Scale to be in excellent range with a value of 0.972. The component-wise reliability of the standardized scale is as follows where all values indicated a good reliability level.

- Perceptual ability Reliability 0.935
- Executing Reading and writing 0.928
- Thought process in Reading and writing 0.908
- Cognitive functioning 0.878
- Mathematical ability 0.908
- Classroom Behaviour 0.797
- Motor skills 0.803

Test-retest reliability: Fifty teachers participated in the study, completing the same test twice within a 15-day interval. Pearson correlation was 0.703 with .000 significance indicating a good reliability level.

Inter-rater reliability (IRR): Multiple raters' percent agreement was calculated with the rating of 6 raters agreement levels with 10 statement questions and the percentage agreement of the developed assessment scale in the current study was found to be 0.72, indicating a strong agreement level**.**

Sensitivity and Specificity: To obtain the sensitivity and specificity of the developed assessment scale, 166 primary-class children were assessed for learning disability with the developed assessment scale, and two tools namely verbal learning disability and non-verbal learning test were used parallelly. 91.3% for sensitivity and 96.83% for specificity was obtained. The kappa coefficient of agreement was obtained at 0.862, Indicating almost perfect agreement and it was statistically significant ($p<0.05$).

Development of norms of the standardized Assessment Scale - Standardized scores were obtained by calculating Z score and Percentile ranks**.** A statistical measurement known as the Z-score indicates how closely a value relates to the mean of a group of values. Z-scores were computed for raw scores for the collected data. For example, for the raw score 70, z = -1.55. Based on the Z-score the levels of LD were identified as profound level of LD to having no LD.

B. Knowledge Attitude Practices (KAP) of Primary School Teachers on Learning Disability

a. Socio-demographic markers of the teachers

- There was a balanced distribution across age groups, with significant representation in the 31-50 age range, comprising 30% each in the 31-40 and 41-50 groups. Younger teachers (21-30 age group) accounted for 26.6%, while those aged 51-60 made up 13.4%. Predominantly female teachers constituted 90.5% of the sample, while males represented 9.5%. Majority of teachers (81.5%) were married. In family type, 63.8% of teachers came from nuclear families and 36.2% from joint families. While, 44.7% of teachers resided in urban areas, 29% in rural areas, and 26.3% in semi-urban areas.
- Educational qualifications showed that 62.3% of teachers hold a degree with B.Ed, 22% a degree without B.Ed, and 15.7% hold a diploma or teacher training. Experience levels varied, with 33.2% having over 15 years of experience, 30.2% less than 5 years, 20.8% with 6-10 years, and 15.8% with 11-15 years. It was found that 73.5% of teachers work in private schools and the rest in government schools. Curriculum frameworks differed, with 82.5% teaching under state boards, 11.3% under CBSE, and 6.2% under ICSE. Regarding working with counsellors, 21.8% of teachers worked with one, while 78.2% did not. Also, 55.4% of teachers studied child development and psychology in their curriculum. While 44.6% did not have child development and psychology in their curriculum.

b. Level of Knowledge Attitude and Practice (KAP) among primary school teachers on learning disability

- A notable 9.8% exhibited a low level, while 76.8% had a moderate understanding, and 13.4% reported a high level of knowledge about learning disabilities. Examining attitudes, 6.0% hold an unfavourable perspective, 60.3% maintained a neutral stance, and 33.7% expressed a favourable attitude. Concerning classroom teaching practices, 3.3% demonstrated poor or unsatisfactory methods, 57.6% exhibited average practices, and 39.1% showcase good or satisfactory approaches concerning learning disabilities.

c. Interaction of KAP of teachers on learning disability

- The correlation coefficients indicated a positive correlation between the knowledge, attitude ($\rho = .391$, $p < .01$), and practice ($\rho = .407$, $p < .01$) of primary school teachers regarding LD. The correlation coefficients between knowledge and practice ($\rho = .407$) and attitude and practice ($\rho = .548$) indicated that the cause and effect of attitude is more on practice than the knowledge.

d. Socio-demographic factors and Knowledge of primary school teachers on Learning Disability

- Socio-demographic factors on teachers' knowledge of learning disability – significant influence of age (H(3)= 26.049, p <.001), marital status (H(2) = 13.229, p = .001**), no of children (H(3) = 30.715, p < .001), years of experience H(3) = 10.328 (p = .016*), board of school H(2) = 13.440, p = .001, type of school (U = 22134.500, Z = -2.405, p = .016*), family type (U = 27329.000, Z = -1.964, p = .050*) and child development /psychology in curriculum (U = 22,280.000, Z = -6.191, p = .000**) were found. Pairwise comparison specified that teachers of 51-60 years and 41-50 years of age, married and widowed teachers, teachers with 3 or more children, 11-15 years and 6 – 10 years of experienced, working in ICSE schools and private school, with Child development / Psychology in the curriculum, and from joint families exhibited higher knowledge levels of LD.

e. Socio-demographic factors and Attitude of primary school teachers on Learning Disability

- Significant influence of age (H(3) = 14.708, p = .002**), marital status (H(2) = 13.937, p = .001**), no of children, educational qualification (H(3) = 22.434, p < .001**), years of experience (H(3) = 12.424, p = .006**), board of school (H(2) = 16.368, p < .001**, type of school U = 22627.500, Z = -2.072, p = .038* and child development /psychology in the curriculum (U = 25282.000, Z = -4.394, p = .000**) was found with regard to attitude. Pairwise comparison indicated that teachers in 51-60 years, followed by 31-40 years of age, married and widowed, with 3 or more children, with over 15 years followed by 11 to 15 years of experience, diploma/teacher training qualified teachers, working in ICSE and private school, and curriculum with CD / Psychology expressed favourable/positive attitude towards LD.

f. Socio-demographic factors and Practice of primary school teachers on Learning Disability

- Age (H(3) = 19.670, p < .001**), marital status (H(2) = 23.931, p < .001**), no of children H(3) = 21.906, p < .001, years of experience (H(3) = 19.426, p < .001**), board of school (H(3) = 19.426, p < .001**), type of school (U = 21006.000, Z = -3.172, p = .002*), child development /psychology in curriculum (U = 27292.500, Z = -3.200, p = .001**) were found to significantly influence teaching practices. Pairwise comparison revealed that teachers 51-60 years, 41-50 years followed by 31- 40 years of age, married and widowed teachers, with 3 or more children, more than 15 years of experience,

working in ICSE schools and private schools, and with curriculum with child development / Psychology had a satisfactory classroom teaching practice.

C. Results of the Sensitization Programme

- **Knowledge:** The mean score of knowledge of the primary school teachers on learning disability was increased from a moderate level (before sensitization 34.47) to a higher level after sensitization and follow-up respectively (39.62 and 40.87). the mean differences were found to be significant at 1% levels.
- **Attitude:** The mean score before sensitization was slightly higher than the after-sensitization scores. However, the mean scores (before sensitization – 84.82, after sensitization – 83.15, follow up – 82.98) fall on neutral attitude.
- **Practice**: The mean score of the practice of the primary school teachers increased from the average level before sensitization (18.96) to a satisfactory/good level in the after-sensitization and follow-up respectively (19.42 and 19.87). The difference was statistically significant at 1% levels.

CONCLUSION

The study presents a comprehensive analysis of an assessment tool for primary school teachers to identify children with learning disabilities and its standardization process, the knowledge, attitudes, and practices (KAP) of primary school teachers regarding learning disabilities (LD), and the impact of a sensitization program.

Firstly, the tool standardization process involved rigorous validity and reliability testing. Through face and content validity assessments, the assessment tool underwent refinement to ensure relevance and accuracy (104 items to 96 items). Factor analysis revealed the tool's robustness, identifying seven distinct components of LD and reducing the initial 96-item scale to a final 48-item scale. The tool exhibited satisfactory validity and reliability measures, indicating its effectiveness in assessing various facets of LD.

Secondly, the study explored into the KAP of primary school teachers concerning LD. It uncovered varying levels of knowledge, attitudes, and practices among teachers, with socio-demographic factors such as age, marital status, experience, and educational background influencing these aspects. Notably, while teachers generally exhibited moderate knowledge and neutral attitudes towards LD, their classroom practices varied from poor to satisfactory/good levels.

Furthermore, the study evaluated the effectiveness of a sensitization program aimed at enhancing teachers' understanding and practices related to LD. Results indicated significant improvements in teachers' knowledge and practices following the program. However, attitudes remained largely unchanged, with most teachers maintaining a neutral stance.

Altogether, the study highlights the complex interplay between teacher characteristics, knowledge, attitudes, and practices regarding LD. It underscores the need for targeted interventions, such as sensitization programs, to address gaps in teacher preparation and support. By equipping teachers with standardized assessment tools, targeted training, and ongoing support, primary schools can better meet the diverse needs of students with LD, ultimately fostering more inclusive and supportive learning environments. In addition, as a tangible outcome of the study, a tool named the **Handy Tool for Primary School Teachers to Identify Learning Disabilities (HT-LD)** was copyrighted, providing a practical resource to aid educators in identifying learning disabilities among primary school children.

Implications of the study:

For Teachers:

- Enhanced Understanding: Deepens teachers' comprehension of LD, enabling tailored support. Enriched knowledge, attitudes, and practices (KAP) among teachers foster greater empathy towards children with learning disabilities (LD), thereby positively impacting the holistic development of these children through the dedicated support provided by teachers.
- Improved Identification: Facilitates swift LD identification, ensuring timely intervention.
- Empowerment: Boosts teachers' confidence and efficacy in addressing LD, fostering inclusivity.

For Children:

Early identification and Intervention: Minimizes academic setbacks through timely support.

For School Administrators:

Supportive Environment: to promote a supportive environment for teachers, enhancing student well-being. Need to handhold teachers and students in their teaching-learning journey. Also, offer counselling services at school for their socioemotional and academic development.

For Policy Makers:

Awareness and Advocacy: should sponsor awareness initiatives and policy prioritization for early identification and intervention to address LD and associated social and academic challenges For Parents:

For Parents:

Early Awareness: need to know about LD and accept it in case their child is struggling with it. Monitor and support the child in building confidence and overcoming it. Parents may get timely support and reduce stress through transparent communication with teachers.

RECOMMENDATIONS

Based on the study outcomes, the following recommendations are proposed: Firstly, there is a pressing need for the creation of an assessment scale to identify LD tailored for teachers proficient in regional languages, ensuring comprehensive evaluation of linguistic proficiency and teaching abilities. Secondly, leveraging technological support (designing an app), and assessment methods for teachers as well as parents to actively engage in their children's education and identify academic difficulties. Lastly, intervention programmes incorporating sensitization modules should be implemented to raise awareness among teachers and parents about the significance of LD, diversified forms, sorts of strategies required to manage, linguistic diversity, and inclusive educational practices. Awareness programmes can be conducted for teachers periodically as professional development initiatives to motivate them time and again and enhance their abilities for easy identification and management of children with any academic problems. These initiatives, spanning from assessment tools to intervention programs, aim to create a supportive teaching-learning environment conducive to the teachers' professional development and academic success of children.

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01.04.2024